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2015-01827

COE 197S ME 8: Activity 6

LISTING NETWORKS

```
C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker network ls
NETWORK ID      NAME      DRIVER    SCOPE
3cf46fddd777    bridge    bridge    local
d024a5fed182    host      host      local
905544bd1490    none      null      local

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>
```

THE DEFAULT BRIDGE NETWORK

```
C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker network inspect bridge
[
    {
        "Name": "bridge",
        "Id": "3cf46fddd777e4b8b225740b513dfb1e448e823887fb8fa1dc1d6006ffb57958",
        "Created": "2021-05-20T09:16:39.7017921Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.17.0.0/16",
                    "Gateway": "172.17.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {
            "d5f14cd8a1ea45d5984952cabed652605e36b75bd5823b0285735c132bfa9044": {
                "Name": "apache",
                "EndpointID": "744555745d13f5d439a657fc3a672c56c5b6ee5e0dfb09f05704a72cedbc7ac8",
                "MacAddress": "02:42:ac:11:00:02",
                "IPv4Address": "172.17.0.2/16",
                "IPv6Address": ""
            }
        },
        "Options": {
            "com.docker.network.bridge.default_bridge": "true",
            "com.docker.network.bridge.enable_icc": "true",
            "com.docker.network.bridge.enable_ip_masquerade": "true",
            "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
            "com.docker.network.bridge.name": "docker0",
            "com.docker.network.driver.mtu": "1500"
        },
        "Labels": {}
    }
]

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>
```

```
C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker run --rm -d --name dummy alcantaraenzo/ping:1.0
589bb88baf4fb9dfc008e4973902c0a12b94082c52d70fcb916df9a6c6d6d7c3

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker network inspect bridge
[
    {
        "Name": "bridge",
        "Id": "3cf46fddd777e4b8b225740b513dfb1e448e823887fb8fa1dc1d6006ffb57958",
        "Created": "2021-05-20T09:16:39.7017921Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.17.0.0/16",
                    "Gateway": "172.17.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {
            "589bb88baf4fb9dfc008e4973902c0a12b94082c52d70fcb916df9a6c6d6d7c3": {
                "Name": "dummy",
                "EndpointID": "a6abbf8602de620dba71bbb617a1c6d08af900c8cf5c5cffce4c7c35ccee898c",
                "MacAddress": "02:42:ac:11:00:03",
                "IPv4Address": "172.17.0.3/16",
                "IPv6Address": ""
            },
            "d5f14cd8a1ea45d5984952cabed652605e36b75bd5823b0285735c132bfa9044": {
                "Name": "apache",
                "EndpointID": "744555745d13f5d439a657fc3a672c56c5b6ee5e0dfb09f05704a72cedbc7ac8",
                "MacAddress": "02:42:ac:11:00:02",
                "IPv4Address": "172.17.0.2/16",
                "IPv6Address": ""
            }
        },
        "Options": {
            "com.docker.network.bridge.default_bridge": "true",
            "com.docker.network.bridge.enable_icc": "true",
            "com.docker.network.bridge.enable_ip_masquerade": "true",
            "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
            "com.docker.network.bridge.name": "docker0",
            "com.docker.network.driver.mtu": "1500"
```

```
C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker run --rm -d -e PING_TARGET=172.17.0.2 --name pinger alcantaraenzo/ping:1.0
15b336a631cde5e9874746f4b125ddd7a41aed82268f11722818dcade2b21a0e

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker ps
CONTAINER ID   IMAGE                    COMMAND               CREATED          STATUS          PORTS                                     NAMES
15b336a631cd   alcantaraenzo/ping:1.0   "sh -c 'ping $PING_T…" 12 seconds ago   Up 8 seconds                                              pinger
589bb88baf4f   alcantaraenzo/ping:1.0   "sh -c 'ping $PING_T…" About a minute ago Up About a minute                                       dummy
d5f14cd8a1ea   httpd:2.4                "httpd-foreground"    17 minutes ago   Up 17 minutes   0.0.0.0:80->80/tcp, :::80->80/tcp         apache

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker logs pinger
PING 172.17.0.2 (172.17.0.2) 56(84) bytes of data.
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.167 ms
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.088 ms
64 bytes from 172.17.0.2: icmp_seq=3 ttl=64 time=0.047 ms
64 bytes from 172.17.0.2: icmp_seq=4 ttl=64 time=0.055 ms
64 bytes from 172.17.0.2: icmp_seq=5 ttl=64 time=0.052 ms
64 bytes from 172.17.0.2: icmp_seq=6 ttl=64 time=0.200 ms
64 bytes from 172.17.0.2: icmp_seq=7 ttl=64 time=0.051 ms
64 bytes from 172.17.0.2: icmp_seq=8 ttl=64 time=0.188 ms
64 bytes from 172.17.0.2: icmp_seq=9 ttl=64 time=0.049 ms
64 bytes from 172.17.0.2: icmp_seq=10 ttl=64 time=0.220 ms
64 bytes from 172.17.0.2: icmp_seq=11 ttl=64 time=0.110 ms
64 bytes from 172.17.0.2: icmp_seq=12 ttl=64 time=0.137 ms
64 bytes from 172.17.0.2: icmp_seq=13 ttl=64 time=0.057 ms
64 bytes from 172.17.0.2: icmp_seq=14 ttl=64 time=0.102 ms
64 bytes from 172.17.0.2: icmp_seq=15 ttl=64 time=0.057 ms
64 bytes from 172.17.0.2: icmp_seq=16 ttl=64 time=0.098 ms
64 bytes from 172.17.0.2: icmp_seq=17 ttl=64 time=0.144 ms
64 bytes from 172.17.0.2: icmp_seq=18 ttl=64 time=0.108 ms
64 bytes from 172.17.0.2: icmp_seq=19 ttl=64 time=0.171 ms
64 bytes from 172.17.0.2: icmp_seq=20 ttl=64 time=0.092 ms

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>
```

MANAGING CUSTOM NETWORKS

```
C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker network create skynet
dc67bee37525614ee66b7c2076ae39d80175c2fe13ee45b29d21b0e30abe4818

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker network ls
NETWORK ID      NAME        DRIVER      SCOPE
3cf46fddd777    bridge      bridge      local
d024a5fed182    host        host        local
905544bd1490    none        null        local
dc67bee37525    skynet      bridge      local

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker network inspect skynet
[
    {
        "Name": "skynet",
        "Id": "dc67bee37525614ee66b7c2076ae39d80175c2fe13ee45b29d21b0e30abe4818",
        "Created": "2021-05-20T15:58:19.4359078Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "Gateway": "172.18.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {},
        "Labels": {}
    }
]

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>
```

ADDING CONTAINERS TO A NETWORK

```
C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker network create skynet
4ea7348767124c0a19c5ae2bd24524146882b55fd0ba6adf23b119943a87e6d1

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker run --rm -d --network skynet --name dummy alcantaraenzo/ping:1.0
59a005c865b1467879247256589c7369991e9b1abed5500cf0f1dfec43c9c584

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker run --rm -d --network skynet -e PING_TARGET=dummy --name pinger alcantaraenzo/ping:1.0
24e2f4597d5dc15ce54fd5a7f368a669c9d5144f0cdcaac32afe457886848693

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker logs pinger
PING dummy (172.19.0.2) 56(84) bytes of data.
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=1 ttl=64 time=0.169 ms
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=2 ttl=64 time=0.090 ms
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=3 ttl=64 time=0.361 ms
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=4 ttl=64 time=0.174 ms
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=5 ttl=64 time=0.170 ms
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=6 ttl=64 time=0.077 ms
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=7 ttl=64 time=0.170 ms
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=8 ttl=64 time=0.169 ms
64 bytes from dummy.skynet (172.19.0.2): icmp_seq=9 ttl=64 time=0.056 ms

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker stop pinger
pinger

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>doc
'doc' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker stop dummy
dummy

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>
```

CONNECTING BETWEEN CONTAINERS IN A NETWORK

```
C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker ps
CONTAINER ID    IMAGE       COMMAND              CREATED          STATUS           PORTS                       NAMES
b75c9dbd5095    postgres    "docker-entrypoint.s…"   16 seconds ago    Up 12 seconds    0.0.0.0:52650->5432/tcp    gadgetdb
659acbebe307    postgres    "docker-entrypoint.s…"   2 minutes ago     Up 2 minutes     0.0.0.0:52644->5432/tcp    widgetdb

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker exec -it widgetdb /bin/bash
root@659acbebe307:/# psql -U postgres
psql (13.3 (Debian 13.3-1.pgdg100+1))
Type "help" for help.

postgres=# \q
root@659acbebe307:/# psql -U postgres -h gadgetdb
Password for user postgres:
psql (13.3 (Debian 13.3-1.pgdg100+1))
Type "help" for help.

postgres=# \q
root@659acbebe307:/#
```

BINDING PORTS TO THE HOST

```
C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker run --rm -d --name widgetdb --network skynet -p 5432:5432 -e POSTGRES_PASSWORD=password postgres
3d1cc5b3e4edabe1f54129a0107da28c52914e57e2504d0e4057db706c3ac212

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker ps
CONTAINER ID    IMAGE       COMMAND              CREATED         STATUS         PORTS                                         NAMES
3d1cc5b3e4ed    postgres    "docker-entrypoint.s…"   6 seconds ago    Up 3 seconds    0.0.0.0:5432->5432/tcp, :::5432->5432/tcp    widgetdb

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker exec -it widgetdb /bin/bash
root@3d1cc5b3e4ed:/# exit
exit

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>psql -U postgres -h localhost
'psql' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>docker exec -it widgetdb /bin/bash
root@3d1cc5b3e4ed:/# psql -U postgres -h localhost
psql (13.3 (Debian 13.3-1.pgdg100+1))
Type "help" for help.

postgres=# /q
postgres=# \q
root@3d1cc5b3e4ed:/# exit
exit

C:\Users\Enzo Alcantara\Documents\GitHub\ME8_Containerization_and_Docker\6-networking>
```